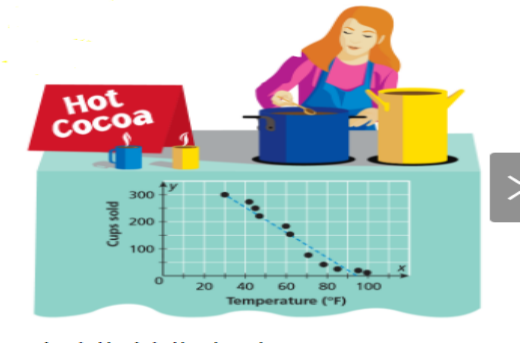
Updated:
November 2021

Marking Period 2	Unit Unit Title: Algebra 1 – Linear and Exponential Modeling: Functions and Bivariate Statistics – Unit 2 - Module C	Recommended Instructional Days 10-12

Domain:		Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-CLKS within Unit
Strand: **S.ID.B.6** Represent data on two quantitative variables on a scatter plot and describe how the variables are related. a. Fit a function to the data (including with the use of technology); use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear and exponential models. b. Informally assess the fit of a function by plotting and	***Progress Indicator:*** ● ***Tests*** ● ***Quizzes*** ● ***Practice problems for homework*** ● ***Workbook pages*** ● ***Worksheets*** ● ***Focus Packet*** ● ***Leveled assessments***	

analyzing residuals, including with the use of technology. c. Fit a linear function for a scatter plot that suggests a linear association. **S.ID.C.7** Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data. **S.ID.C.8** Compute (using technology) and interpret the correlation coefficient of a linear fit. **S.ID.C.9** Distinguish between correlation and causation.		
Mathematics Practices		**Essential Question/s:**
1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure.		**1.**What does the domain represent? What does the range represent? 2 . What does a scatter plot look like if there is no correlation between the data sets? Positive correlation? Negative correlation? 3. How is identifying an arithmetic sequence similar to identifying a function rule?

		Activity Description: **Interdisciplinary Connections: Content: ;NJSLS#:**
Social and Emotional Learning: ***Competencies***	**Social and Emotional Learning:** ***Sub-Competencies***	
Self-Awareness Social Awareness Self-Management Relationship Skills Responsible Decision-Making	● Recognize one's feelings and thoughts ● Recognize the impact of one's feelings and thoughts on one's own behavior ● Recognize One's personal traits, strengths, and limitations ● Recognize the importance of self-confidence in handling daily tasks and challenges ● Recognize and identify the thoughts, feelings, and perspectives of others ● Demonstrate an awareness of the differences among individuals, groups, and others' cultural backgrounds ● Demonstrate an understanding of the need	

	for mutual respect when viewpoints differ ● Demonstrate an awareness of the expectations for social interactions in a variety of settings ● Understand and practice strategies for managing one's own emotions, thoughts, and behaviors ● Recognize the skills needed to establish and achieve personal and educational goals ● Identify and apply ways to persevere or overcome barriers through alternative ● methods to achieve one's goals ● Establish and maintain healthy relationships ● Utilize positive communication and social skills to interact effectively with others ● Identify ways to resist inappropriate social pressure ● Demonstrate the ability to prevent and resolve	**Activity- Business** Fit a Linear Function to Data **When there is a strong correlation between two variables, you can use a line of fit to construct a linear model for the data. To estimate a line of fit, position a straightedge through the middle of the plotted data points so that the data points are evenly dispersed above and below the line. Use the straightedge to draw a line. Then select two points on the line to write the equation.** **The scatter plot for the data of hot cocoa sales from Task 2 is shown. Draw a line of fit, and write an equation for the line of fit.** 

	interpersonal conflicts in constructive ways ● Identify who, when, where, or how to seek help for oneself or others when needed ● Develop, implement, and model effective problem-solving and critical thinking skills ● Identify the consequences associated with one's actions in order to make constructive choices ● Evaluate personal, ethical, safety, and civic impact of decisions	**Draw the line of fit. Use a straightedge to draw a line of fit, such as the blue dashed line that is shown. The data points should appear to be clustered around the line.** **Write an equation for the line of fit.** **Select two points (not necessarily data points) on the line: (30, 300) and (60, 160).** **Find the slope of the line.** $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{160 - 300}{60 - 30} = -\frac{140}{30} = -\frac{14}{3}$ **A. How do you know what points to select?** **Use point-slope form to write an equation of the line.** $y - y_1 = m(x - x_1)$ $y - 300 = -\frac{14}{3}(x - 30)$ $y - 300 = -\frac{14}{3}x + 140$ $y = -\frac{14}{3}x + 440$ **B. What do the slope and y-intercept represent in this line of fit?**

Application to Sales

The table contains data for the total amount of money, in dollars, collected at a movie theater concession stand and the total number of movie tickets sold each day for 5 days.

Movie tickets sold	23	42	60	85	124
Concession stand sales ($)	155	189	341	420	565

A. Make a scatter plot and describe any correlation.

B. Do you think there is any causation? Explain.

C. Fit a line to the data in your scatter plot and write an equation for it.

D. What do the slope and y-intercept of the line of fit represent in this situation?

E. Use your line of fit to predict the concession stand sales when 75 movie tickets are sold. Is this an interpolation or extrapolation?

F. Use your line of fit to predict the concession stand sales when

200 movie tickets are sold. Is this an interpolation or extrapolation?

Height (m)	60	61	62	63	64	65	66	67	68
Girth (m)	4.83	5.10	4.93	5.15	4.77	4.93	4.89	4.57	5.04

Application to Science

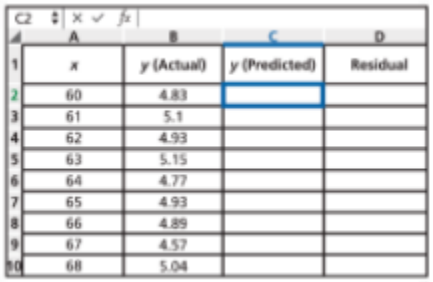
1)

A. Using a spreadsheet, create a table like the one shown. What is the formula for the predicted y-value in cell C2? Fill down the formula for cells C2–C10 to find the predicted values.

B. To determine the residual in cell D2, what formula do you use? Fill down the formula for cells D2–D10 to find the residual values.

C. Use a graphing calculator to graph a residual plot of x-values and residuals.

D. Evaluate the quality of fit to the data for the line y = 0.04x + 2.32.



	x	y (Actual)	y (Predicted)	Residual
2	60	4.83		
3	61	5.1		
4	62	4.93		
5	63	5.15		
6	64	4.77		
7	65	4.93		
8	66	4.89		
9	67	4.57		
10	68	5.04		

2) The table shows the mean height and girth (circumference) measurements for Douglas fir trees in a mountain range. A line of fit for the data is y = 0.04x + 2.32, where x is the height and y is the girth, both in meters.

Highlight on:

Dr. Stephon Alexander

Assessments (Formative) ***To show evidence of meeting the standard/s, students will successfully engage within:***	**Assessments (Summative)** ***To show evidence of meeting the standard/s, students will successfully complete:***
Formative Assessments: ● Entry and Exit Slips ● Quizzes ● Self Assessments	**Benchmarks:** ● Chapter Tests Projects **Summative Assessments:** ● Units Assessments ● District assessments ● Standardized test

Differentiated Student Access to Content: Teaching and Learning *Resources/Materials*			
Core Resources	**Alternate Core Resources *IEP/504/At-Risk/ESL***	**ELL Core Resources**	**Gifted & Talented Core Resources**
http://my.hrw.com https://www.khanacademy.org https://www.desmos.com http://www.edulastic.com http://www.quizzizz.com http://www.edpuzzle.com http://www.youtube.com https://www.mathsisfun.com/	• Reteaching worksheets • Skill building workbook • Math manipulatives • Leveled practice worksheets • Differentiation Options • Small group activities	• Dictionary for native language • Video tutorial in native language • Success for English Learners • worksheets • Leveled Strategies for English • Learners • Linguistic Support	• Enrichment worksheets and activities • Challenge questions • Problem Solving workshop • Leveled assessments
Supplemental Resources			
Technology: Chromebooks, Graphing Calculators • Other: Google Meets, Jamboard , whiteboard.fi, Google Classroom			
Differentiated Student Access to Content: Recommended *Strategies & Techniques*			
Core Resources	**Alternate Core Resources *IEP/504/At-Risk/ESL***	**ELL Core Resources**	**Gifted & Talented Core**

Deliver instruction utilizing varied learning styles including audio, visual, and tactile/kinesthetic, provide individual instruction as needed, modify assessments and/or rubrics, repeat	**Utilize a multi-sensory (VAKT)approach during instruction, provide alternate presentations of skills by varying the method(repetition, simple explanations, additional examples, modeling, etc.), modify test content and/or format, allow students to retake test for additional credit, provide additional times and preferential seating as needed, review, restate and repeat directions, provide study guides, and/or break assignments into segments of shorter tasks.**	**Extend time requirements, preferred seating, positive reinforcement, check often for understanding/review, oral/visual directions/prompts when necessary, supplemental materials including use of an online bilingual dictionary, and modified assessment and/or rubric.**	**Create an enhanced set of introductory activities, integrate active teaching/learning opportunities, incorporate authentic components, propose interest-based extension activities, and connect student to related**

NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS	**Disciplinary Concept: Creativity and Innovation**	
	Core Ideas:	**Innovative ideas or innovation can lead to career opportunities.**
	Performance Expectation/s:	**9.4.12.CI.2: Identify career pathways that highlight personal talents, skills, and abilities (e.g., 1.4.12prof.CR2b, 2.2.12.LF.8).** **• 9.4.12.CI.3: Investigate new challenges and opportunities for personal growth, advancement, and transition (e.g., 2.1.12.PGD.1).**

	Career Readiness, Life Literacies, & Key Skills Practices
	Act as a responsible and contributing community member and employee. **Attend to financial well-being.** **Consider the environmental, social and economic impacts of decisions.** **Demonstrate creativity and innovation.** **Utilize critical thinking to make sense of problems and persevere in solving them.** **Model integrity, ethical leadership and effective management.** **Plan education and career paths aligned to personal goals.** **Use technology to enhance productivity, increase collaboration and communicate effectively.** **Work productively in teams while using cultural/global competence.**

New Jersey Legislative Statutes and Administrative Code (place an "X" before each law/statute if/when present within the curriculum map)									
X	Amistad Law: *N.J.S.A. 18A 52:16A-88*		Holocaust Law: *N.J.S.A. 18A:35-28*		LGBT and Disabilities Law: *N.J.S.A. 18A:35-4.35*	X	Diversity & Inclusion: *N.J.S.A. 18A:35-4.36a*		Standards in Action: *Climate Change*